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ABSTRACT

This booklet is the fifth in a series of profiles of "what works" at high schools in the High Schools that Work program. It contains 40 outstanding practices descriptions aligned with the key practices of the High Schools that Work program. The profiles contain a short description of the strategies and contact information. Representative topics are as follows: technology linking school and home in helping students meet higher expectations; using a team approach to establish higher standards; manufacturing and construction technology teacher operating classroom like a business; strengthening ties between education and business; connecting communication skills to the real world through papers, projects, and portfolios; helping all students succeed in a first-year algebra course; designing and implementing an engineering academy that follows the High Schools that Work guidelines; developing new lesson plans and projects based on teachers in industry program, using flexible block scheduling, using reading to learn strategies in the guidance and student services program, and students getting extra help during in-school flextime. (KC)

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ED 404 540

1995 Outstanding Practices

Effective Strategies from *High Schools That Work* Sites
in Raising the Achievement of Career-Bound High School Students

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HIGH SCHOOLS THAT WORK
Integrating Academic and Vocational Education

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Using Outstanding Practices to Improve Schools and Classrooms

As I visit sites in the *High Schools That Work* network, I constantly receive requests for information on effective school and classroom practices—strategies that others are using to raise career-bound students' achievement. This annual publication was created to help respond to these requests. We also share information during technical assistance visits, workshops, and conferences; through videotapes and satellite teleconferences; and in other publications.

I encourage you to use this publication as you implement your action plans for school improvement. You may want to write or phone the contact persons for more information. You may also want to visit another school or invite someone from that school to meet on site with your teachers.

The 40 descriptions in the *1995 Outstanding Practices* are richer in data than those of previous years. This fact tells me that many of our schools are keeping score on their accomplishments and are prepared to demonstrate the difference that their activities are making in students' lives.

SREB continuously seeks outstanding practices to share with *HSTW* sites. If your school is doing something that works, please send us information for dissemination to school leaders and teachers in the network.

Thank you for your dedication and hard work in preparing students to be productive citizens. We hope these outstanding practices will provide ideas and inspiration for your activities.

Gene Bottoms, Director
High Schools That Work

Connecting Outstanding Practices to the *High Schools That Work* Key Practices

This publication contains descriptions of 40 Outstanding Practices from *High Schools That Work* sites. Each description is accompanied by one or more numerals corresponding to the *HSTW* key practices (see page 2). The numbers may not represent the only key practices that these schools are implementing, but they represent the major ones highlighted here. If you are interested in a particular practice, simply look for its number throughout the book.

High Schools That Work Key Practices

High Expectations – Setting higher expectations and getting career-bound students to meet them.

Vocational Studies – Increasing access to challenging vocational and technical studies, with a major emphasis on using high-level mathematics, science, language arts, and problem-solving skills in the context of modern workplace practices and in preparation for continued learning.

Academic Studies – Increasing access to academic studies that teach the essential concepts from the college preparatory curriculum through functional and applied strategies that enable students to see the relationship between course content and future roles they envision for themselves.

Program of Study – Having students complete a challenging program of study with an upgraded academic core and a major. An upgraded academic core includes at least four years of college preparatory English and three years each of mathematics and science, with at least two years in each area equivalent in content to courses offered in the college preparatory program. The major includes at least four Carnegie units in a career or academic major and two Carnegie units in related technical core courses.

Work-based Learning – Providing students access to a structured system of work-based and high-status school-based learning—high school and postsecondary—collaboratively planned by educators, employers, and workers and resulting in an industry-recognized credential and employment in a career pathway.

Teachers Working Together – Having an organizational structure and schedule enabling academic and vocational teachers to have time to plan and provide integrated instruction aimed at teaching high-status academic and technical content.

Students Actively Engaged – Having each student actively engaged in the learning process.

Guidance – Involving each student and his her parent(s) in a career guidance and individualized advising system aimed at ensuring the completion of an accelerated program of study with a career or academic major.

Extra Help – Providing a structured system of extra help to enable career-bound students to successfully complete an accelerated program of study that includes high-level academic content and a major.

Keeping Score – Using student assessment and program evaluation data to continuously improve curriculum, instruction, school climate, organization, and management to advance student learning.

Technology Links School and Home in Helping Students Meet Higher Expectations

Souderton Area High School in Souderton, Pennsylvania, a suburb of Philadelphia, enrolls 1,560 students in grades 9 through 12. Teachers and administrators are dedicated to the premise that "All students can learn."

In raising standards and expectations, the school has increased graduation requirements from 17 credits five years ago to the current 23 credits. All students are required to take four years of mathematics, science, language arts, and social studies. A general track composed of low-level courses has been eliminated.

Technology plays a major role in preparing students at Souderton Area High School. Teachers, students, and parents are part of a computerized network linking the school with students' and teachers' homes. For example:

- Parents have phone access to their children's assignments, due dates, test grades, daily and class attendance, and disciplinary actions. The school has eight lines to accommodate the large number of calls.
- Parents with a personal computer and a modem have access to tutorial services designed to assist students with assignments. If parents do not have a computer and modem, they can use a touch-tone phone to learn about tutorial services available at the school.
- The system automatically contacts parents every two weeks to report any difficulties their children are experiencing. Progress reports are also sent to parents through the system.
- Teachers and administrators receive a printout of parents' messages and questions.
- Teachers can enter students' grades from home, eliminating paperwork.

In the past five years, the high school has experienced significant changes in student achievement and behavior, including the following:

- Students' failure rate per school quarter dropped from 10 percent to three percent;
- Student suspensions declined by 60 percent;
- Average daily attendance increased from 87 percent to 93 percent.

Souderton Area High School's next step is to individualize instruction by having teachers use computers to diagnose students' academic weaknesses and to prescribe learning strategies. Teachers will consult a curriculum database in creating instructional plans for upcoming classes.

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Using a Team Approach to Establish Higher Standards

The **DoLeeCo Tech Prep Consortium** consists of Lee County and Dougherty County school systems, Albany Technical Institute, and Darton College, all located within a 10-mile radius encompassing the southwest Georgia towns of Leesburg and Albany. The five high schools and two postsecondary institutions in the consortium emphasize a seamless, articulated program of study consisting of challenging academic and technical courses designed to prepare workers for a global economy.

In preparing students, the consortium has strengthened high school standards in academic and technical areas. Students who plan to enter

postsecondary programs requiring a background in mathematics are required to take algebra and geometry. Anatomy has been added to the high school science curriculum for students planning to enter postsecondary allied health and nursing programs. Applied mathematics, science, and communication courses are offered for students who benefit from practical, hands-on learning experiences. A *Career Planning Guide* distributed to high school students and their parents describes programs of study for business, allied health, and technical areas.

Another major objective of the consortium has been to identify high school and postsecondary course competencies and to determine gaps and duplications in course content. These competencies were printed in a *Course Competency Guide* distributed to high school and postsecondary administrators, counselors, and teachers. Competency sheets are designed as check-off sheets. As each student completes a competency with at least 80 percent accuracy, the program instructor makes a check mark on the student's sheet. Students who complete the competencies can receive advanced credit for courses taken in high school, or they can take an exemption test at a postsecondary institution.

Business and industry representatives have participated in the development of courses and competencies. Ongoing course revisions reflect changes in state and national standards for certification and accreditation. Annual staff development activities for counselors and teachers include updates on job opportunities as well as job shadowing and mentoring programs in business and industry. Participation by the Lee and Dougherty County school systems in the *High Schools That Work* program provides structure for continued strengthening of educational opportunities for career-bound youth.

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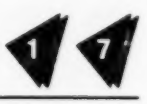
Career Portfolios Strengthen Students' Reading, Writing, and Research Skills



Eleventh-graders in English classes at **Kent County High School**, a comprehensive high school in Worton, Maryland, produce career portfolios demonstrating their reading, writing, and research skills. Each student's portfolio contains:

- An autobiographical narrative or essay;
- A résumé;
- A cover letter for a résumé;
- A character reference letter for a classmate;
- A career analysis outline based on library research;

- A self-assessment of high school grades and activities;
- A sample job application;
- A sample postsecondary school application;
- A description of a business or company and its employment opportunities;
- Profiles of two colleges or universities;
- A profile of a community college or technical school;
- A career-related annotated bibliography.

Students receive detailed assignment sheets for each portfolio section. They also participate in question and answer sessions based on the sheets.

To help students prepare their portfolios, English teachers provide class time for them to use the media and career centers. During the final weeks of the project, students put the finishing touches on their written materials in the computer lab. They earn homework grades for drafts of their portfolios and a project grade for the finished product.

The 12-part assignment engages students in writing outlines, narratives, essays, and business letters; reading to find specific information; proofreading their work; and interviewing classmates. Students work independently and in teams, and teachers serve as facilitators rather than lecturers. The project teaches students the importance of using communication skills to enter the workplace, a job training program, or a postsecondary institution.

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Manufacturing and Construction Technology Teacher Operates His Classroom Like a Business

A manufacturing and construction technology teacher at **Bayside High School** in Virginia Beach, Virginia, operates his classroom like a business. He views students as "employees" and holds them to high workplace standards. Three of the teacher's classes are composed of at-risk students from an academy or school-within-a-school.

The teacher's carpentry classes are organized into three "factories" that collaborate in manufacturing a product. Students research a product, create a design, build a scale model, make production flow charts, take bids on materials, and develop a marketing plan. They sell the products they produce.

While working on a full-size storage shed, the students found a customer in the community who wanted to purchase it. After gaining the buyer's approval of the design and scale model, the students sought bids on materials, chose a supplier, bought the materials, built the shed, and delivered it to the customer.

These students used mathematics, science, communication, and business skills in completing this project. They also gave written and oral reports enriched by charts and graphs. By satisfying real customers in the community, they are learning to meet workplace demands for quality products and services.

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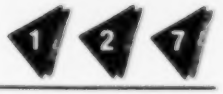
Students Operate a School Bank That Accepts Deposits and Makes Loans



A banking and finance class at **Bell County High School** in Pineville, Kentucky, operates an in-school bank where students make deposits, earn interest, and borrow money as they might at a real financial institution. The 11th and 12th graders in the class rotate through every position in the bank during the year. In this way, they gain experience as a bank president as well as a loan officer or teller.

The First State Bank assists the school with the project and conducts an annual audit of the student-operated enterprise. Bank officers and employees visit the school and provide job shadowing opportunities.

The school's First State Champs Bank does not handle checking accounts but accepts savings deposits and makes loans of up to $100 for student expenses such as school yearbooks and tuxedo rentals.

When the project began four years ago, one classroom was converted into a bank, complete with teller windows. "The experience is as real as we can make it and not be a branch bank," the principal said.

Student bankers at Bell County High School take higher-level mathematics and business courses, their principal reports. They also enroll in postsecondary institutions, where many of them continue their studies in business and finance.

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Strengthening Ties Between Education and Business

The **Lauderdale County** school district, which includes **Ripley High School** in Ripley, Tennessee, has created business and education partnerships that are helping strengthen the curriculum and integrate academic and vocational studies. District leaders follow practical guidelines for linking high school studies with the workplace. These guidelines include:

- Obtaining a commitment from business and industry. The Lauderdale County school system enlisted the local Business and Industry Education Alliance as an advisory group.
- Surveying and or conducting an open forum with employers to find out what they think students need to know and be able to do to succeed in the workplace. District leaders learned that they needed to revise the high school curriculum to reflect workplace standards.
- Developing a community-wide task force of educators, business leaders, and parents to help revise the high school curriculum. As a result, the district closed some courses and divided, subdivided, or expanded others.
- Requiring all high school academic and vocational teachers to participate in business and industry orientation programs. As part of staff development, Ripley High School teachers are assigned to visit two companies in fields related to what they teach. In these visits, they have found ways to relate high school learning to the work site.
- Arranging for teachers and business representatives to change places for short-term experiences. Ripley High School does not require these exchanges, but 10 percent of teachers have done so and can use their experiences to make learning real for students in the classroom.

- Asking employers to cooperate in giving parents time off to meet with teachers and counselors at the school. The school emphasizes that the time will be used to help students plan challenging programs of study.

As a result of these partnerships, Ripley High School students have gained a more realistic view of the workplace, and employers are taking the school's graduates more seriously.

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Students Use Real Laboratory Equipment in Industry-Developed Chemistry Course

1 3 7

A chemist at a hazardous waste recycling center in Kentucky has created an applied chemistry course for 12th graders at **Eminence High School** in Eminence, Kentucky, and **Henry County High School** in New Castle, Kentucky. Instead of conducting field trips and presenting lectures to link school and work, chemist Kelley Patterson of the Safety-Kleen Corporation developed a course allowing students to work in an actual chemical industry laboratory.

At the Safety-Kleen Corporation recycling center, students conduct tests to determine the motor oil, anti-freeze, and paint content of materials to be recycled. Their results verify previous test results performed by Safety-Kleen employees.

Students earn two class credits for the year-long course, which meets two hours daily Monday through Friday. The course combines classroom and laboratory instruction, written assignments, and laboratory experience and has been accredited by the state of Kentucky.

The recycling center and the school use a rigorous process to select 12th grade students who have completed one year of high school chemistry. Interested students submit applications, essays, transcripts, and teacher evaluations and are interviewed by Safety-Kleen management.

One student decided to attend college after taking the course. "His grades and attitude improved tremendously when he became interested in what he was learning," Patterson said. Now, the student works a night shift at Safety-Kleen and attends college part time during the day. After six months, the company will reimburse his college tuition.

Debby Mercer, principal at Eminence High School, says the course increases students' understanding by engaging them in using what they study. "I am impressed with how hard students work in the course," she said.

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Connecting Communication Skills to the Real World through Papers, Projects, and Portfolios

The challenging applied communication curriculum at **East Paulding High School** in Dallas, Georgia, connects skills such as critical thinking, problem solving, decision making, reading, writing, listening, and speaking. It also links these skills to the real world through student research papers, projects, and portfolios.

Students participate actively in the Applied Communication class. They help choose literature selections, develop course syllabi, create project assignments, and devise evaluation criteria. By having input in the course and knowing that their opinions count, students take more interest in what they are learning.

In one unit, students work in teams to prepare to teach a story or poem to the class. They prepare a study guide consisting of questions, notes, and definitions; generate a test containing at least 10 questions; and make a 30-minute presentation involving class participation.

Each student completes a research paper focusing on a career field that he she hopes to pursue. In gathering information for their reports, the students consult magazines, books, computer databases, and experts in the field. Some students have changed their career goals after learning what a job entails.

Eleventh-graders taking Applied Communication compile career portfolios that can be used later in finding a job. Each portfolio contains a classified advertisement for a job opening, a letter of application, a matrix of jobs in the student's career field, interviews with personnel in these jobs, a functional résumé, a cover letter, a pocket résumé, and a completed job application.

Strong writing skills gained in the Applied Communication course are helping students achieve at a higher level. In 1994-95, 90 percent of Applied Communication students at East Paulding High School passed the writing component of the Georgia High School Graduation Test on the first try.

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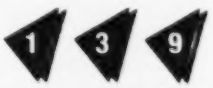
Helping All Students Succeed in a First-Year Algebra Course



All students at **Gloucester High School** in Gloucester, Virginia, are required to take first-year algebra as the foundation for additional mathematics courses and for future problem-solving. To help students succeed, a team of teachers developed a Mastering Algebra I curriculum to replace the traditional Algebra I course. The curriculum includes extra help and time for students to successfully complete the 10 units of study.

Six teachers work and plan together in the course. Through a team approach, they deliver the instruction, give tests, tutor students as needed, and contact parents.

Students who fail to successfully complete a unit or want to improve a test score must attend tutoring sessions. These sessions are offered daily during or after school. If students do not successfully complete the required number of units in a school quarter, they receive an Incom-

plete grade and must participate in tutoring and re-testing until they earn a grade of A, B, or C.

A three-week Summer Success program is offered for students who need more time to complete the 10 units. If students are unable to complete the program during the summer, they meet with teachers during the next school year until the work is completed.

Parental support is an integral part of the program. Teachers keep in touch with parents through phone calls, letters, and meetings.

In 1994-95, the first year of the program, a total of 330 students, primarily ninth-graders, enrolled in Mastering Algebra I. A large majority of students demonstrated mastery of the 10 study units by the end of the school year. The remaining students completed their studies in the Summer Success program or undertook to complete them during a daily extended instructional block in the 1995-96 school year.

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Principals Can Support Teachers in Achieving *HSTW* Goals and Key Practices

Grove High School in northeast Oklahoma enrolls 550 students in grades 9 through 12. The school offers a wide range of options, including a college preparatory program, applied academic courses, vocational programs, and access to an area vocational-technical center.

In implementing the *High Schools That Work* goals and key practices, administrators and counselors have given full support and encouragement to the faculty. During the past two years, the school has set higher standards, replaced the general track, helped all students in grades 9 through 12 develop a six-year program of study, and established a school-to-work program with Grove General Hospital. All teachers are encouraged to develop cross-curriculum units of instruction with other teachers.

All students have a teacher who advises them and their parents on a planned program of study. Teachers are assigned 15 to 20 students from grades 9 through 12.

The mathematics achievement of students taking applied mathematics courses has improved. These students took a sequence of courses that included Applied Mathematics I and II and Algebra II. School leaders and teachers point to the relevance of the curriculum in raising student achievement.

Students in the work-based learning program work in health- and business-related fields at the hospital. Additional work-based learning programs are being developed in banking, small manufacturing, and retail sales.

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Physics and Electrical Careers Students Share Knowledge and Skills in an Integrated Project

Carlisle High School in Carlisle, Pennsylvania, is a comprehensive high school for students in grades 9 through 12. Academic and vocational classes are held in separate buildings. Students in vocational studies spend three of seven periods daily in their vocational concentrations. The other four are spent in academic classes. The students have limited interaction with college preparatory students in academic classes.

School leaders and teachers developed a way to bring career-bound and college-bound students together in a joint project using concepts from physics and electricity studies. In this project, electrical careers students taught physics students how to wire household circuits. The physics students knew the theories behind reading schematics and wiring circuits, but they lacked the mechanical training for doing the work. The electrical careers students explained the use of each tool before work began. Although the students were hesitant at first, they soon became involved in student-to-student activities. Not all groups of students operated their circuits on the first try, but eventually they were all able to do so.

As a follow-up activity, several students from an English class interviewed students from the physics and electrical careers classes. The physics students expressed the opinion that the electrical careers students are "smarter than we thought because they can do so much."

This integrated, hands-on project was a success. The physics students gained new respect for vocational students, who in turn were excited to discover that they can teach something to college preparatory students.

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Teachers Are the Key to Success in Replacing the General Track

As a member of the SREB *High Schools That Work* program, **Lee County High School** in Beattyville, Kentucky, made a commitment to replace the general track with a more challenging and meaningful curriculum. Recognizing that students enrolled in the general track need the most help, school leaders adopted the position with students, teachers, and the community that the school's job is to prepare all students as productive citizens.

Three years ago, with the aid of the Lee Campus (the area vocational center) of Kentucky Tech, Lee County High School replaced the general track with a fully integrated curriculum emphasizing "learning by doing." The new curriculum involves higher expectations for all students, continuous reinforcement of academic theory through vocational application, and ongoing career planning and preparation. The school raised graduation requirements to 27 credits and implemented an advisor/advisee system to help students achieve at a higher level.

Enthusiasm for the improvement program, including replacing the general track, remains high among teachers. Initially, the principal offered incentives for faculty members to develop integrated academic and vocational studies and

to use applied instructional methods. Once the teachers started planning lessons together, they were amazed at how their courses overlapped. The collaboration progressed so well that no further push from the administration was needed. In the past few years, the Lee County school system has provided its teachers with opportunities to visit other districts and to participate in a variety of off-site professional development activities to learn what others are accomplishing through similar school improvement plans.

Now, academic and vocational teachers in Lee County work together on a daily basis. It is not unusual for a physics class from the high school to visit nearby Kentucky Tech, Lee Campus to watch a welding demonstration that reinforces what they have studied in the classroom concerning the properties of metals, or to conduct an experiment in the electricity shop to illustrate Ohm's Law.

Teachers from the two schools engage in joint staff development activities and work together on an increasing number of integrated projects. One example of this collaboration is the building of a 10-foot replica of the St. Louis Arch. Teachers and students from mathematics, welding, carpentry, technical education, agriculture, business, and other disciplines helped build the arch. The completed project stands in front of the vocational school as a monument to effective academic and vocational integration.

The result of school and classroom changes has been positive. In the past three years, the dropout rate decreased to an average of 5.67 percent and the number of students entering postsecondary education, the workplace, or the military increased over 17 percent. The school's accountability score from the state of Kentucky rose 6.9 percent between 1992 and 1994 and reflects increases in reading, mathematics, science, and social studies.

As teachers at Lee County High School continue to work together for the benefit of all students, the school has experienced an obvious improvement in student and faculty morale.

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English and Vocational Teachers Engage Students in Interdisciplinary Projects

Vocational and English teachers at **Tolsia High School** in Fort Gay, West Virginia, use joint learning projects to get career-bound students to master complex academic concepts. Tolsia enrolls 600 students in grades 9 through 12. One example of an interdisciplinary project is the medieval town built to scale and landscaped by English and horticulture students working together.

Each project involves a written report, an oral report, and a product. The vocational teacher requires students to read and understand the technical aspects of the project while the English teacher provides guidelines for the written report and emphasizes its academic content. Both teachers check the reports for academic and technical concepts and standards. Students receive grades in English and vocational courses.

While students are working on their projects, the English teacher visits the vocational classroom to offer assistance.

At the conclusion of a four- to six-week period, each student makes an oral presentation on his/her chosen topic and explains the technical aspects of the project model. The models are displayed for students and parents in the English classroom.

As a result of this project:

- Vocational and academic teachers as well as their students work together.
- Students gain a better understanding of vocational topics.
- Students take pride in their products and want to share the results with others.
- The project promotes higher expectations and raises standards.
- Students work on products related to their technical studies.

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Academy Approach Is Raising Student Achievement in a Consortium of Secondary and Postsecondary Schools

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The **Quad-County Tech Prep Consortium** in Florida is a partnership between Indian River Community College and four school districts: Indian River, Martin, Okeechobee, and St. Lucie County. The consortium has implemented focused programs of study developed around the "academy" approach to integrated academic and vocational learning. All of the academies are career-focused.

The academy concept at each high school varies according to students' needs, available resources, and administrators' and instructors' approaches to applied academics. Some schools offer one or more academies or schools-within-schools for groups of students, while other schools enroll all students in a school-wide academy program.

Regardless of the approach used, the schools strive to achieve common elements identified with success. These elements include a rigorous, academically-challenging, technically-oriented program of study and the resources required for staff and curriculum development. The program of study provides teachers with common planning time, common students, and longer class periods made possible by block scheduling.

Four steps in implementing an academy include:

- Assessing current technical programs on which an academy may be developed.
- Identifying applied academic courses that may become part of an academy.
- Identifying academic and vocational instructors interested in integrated learning. These teachers may demonstrate their interest through current teaching practices, participation in staff development activities, and willingness to collaborate with colleagues.
- "Selling" the program to administrators, teachers, guidance counselors, parents, and students by identifying the benefits of an academy.

Most teachers and administrators who have worked with academies in the Quad-County Tech Prep Consortium agree that:

- Students who become part of an academy in the ninth grade are more receptive to the approach than are seasoned students.
- A "school-within-a-school" type of academy should not be isolated from the rest of the school. (Although the academy may be housed apart from the main school campus, constant contact should be maintained with non-academy students, instructors, and administrators.)
- Teachers from all disciplines should be involved in the initial implementation stages.

- An academy team of academic and vocational teachers must have common planning time.
- The best way to recruit students is to set high standards; communicate these standards to all prospective academy students and their parents; and involve academy teachers, students, and parents in recruitment.

Integrated academic and vocational learning in an academy setting in the Quad-County Tech Prep Consortium has resulted in increased student achievement. In the 1994-95 school year, academy students at one consortium school scored seven points higher in mathematics and five points higher in English than the average of all students taking the competency tests required for high school graduation in Florida. At that same school, 10th-graders taking college preparatory-level courses in the academy program earned a 2.08 GPA in 1993-94. Their average rose by over one-quarter of a point even though they had taken low-level academic courses in ninth grade the previous year.

The consortium also measures progress in the academy program in numbers of students completing a technical program, scholarship awards received, numbers of students enrolled in high-level academic courses, numbers of teachers using applied instructional strategies, numbers of teachers working together to raise students' academic and technical achievement, and numbers of students prepared for postsecondary education and the workplace.

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Auburn High School Is on a Pathway to Higher Standards and Student Achievement

1 4 9 10

Three years ago, the school system in Auburn, Alabama, decided to eliminate the general curriculum at **Auburn High School** and begin phasing out all basic classes. Two new curricula were implemented: the Academic Professional curriculum and the Academic Tech curriculum. Students in Academic Tech earn four credits in a technical area.

The school publicized the change to students, parents, and the community through public meetings and newspaper articles. Counselors met with every eighth-grader and his/her parents to explain the programs of study. The key message to all audiences was that both curricula will allow students to continue their education beyond high school.

To assist students who might need extra help, the school initiated an after-school tutorial program. In the program, two science teachers, a mathematics teacher, and an English teacher are available for an hour Monday through Thursday to help students referred into the program by their teachers or parents. The school provides transportation from school to home for students participating in tutoring sessions.

Beginning with the class of 1993, Auburn High School began offering a guarantee to graduates and their employers. If Auburn High School graduates do not possess the reading, spelling, writing, and mathematics skills needed to perform satisfactorily on the job, the school will give the graduates additional education.

All Auburn High School students, beginning with the class of 2000, will complete a core curriculum that includes four credits in each of four courses—English, mathematics, science, and social studies. Students will complete at least one area of concentration and will need 28 credits for graduation.

Auburn High School administered achievement tests in the 1994-95 school year and will use the data to track progress under their new programs. It is already clear that students are enrolling in higher-level academic courses and are making an extra effort to meet the school's increasingly challenging standards.

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High School Restructuring Includes New Graduation Requirements and a Comprehensive Guidance System

North Laurel High School in London, Kentucky, enrolls 1,300 students in grades 9 through 12. A school council composed of three teachers, two parents, and the principal has been instrumental in making major changes in school and classroom practices. New approaches include 4 x 4 block scheduling, increased graduation requirements, elimination of the general track, and development of a comprehensive guidance system.

Workplace preparation is evident in the school's new graduation standards requiring students in the class of 1998 to complete 28 rather than 20 credits. In addition, each student must complete an education and career portfolio; school-sponsored and or school-approved activities which can include work-based learning; and a senior project consisting of topic exploration in the ninth grade, project research in the 10th grade, teacher or community mentoring in the 11th grade, and a paper, project, and presentation in the 12th grade.

The school council and school administrators, counselors, and teachers developed a guidance curriculum for grades 9 through 12. Each teacher and an advisory group of 15 to 20 students meet for an hour each day to focus on education- and career-related topics. To conduct these sessions, each teacher is given a thick notebook of guidance activities as well as access to videotapes and computer software.

North Laurel High School teachers and leaders are focusing on the needs of all students. They have created a vision, raised expectations, and established a core curriculum for tech prep and college preparatory students alike. From 1993-94 to 1994-95, the school experienced positive changes in student achievement and behavior, including:

- Students' ACT scores improved from 18.7 to 19.5;
- The percentage of graduates entering postsecondary education, the workforce, or the military grew from 91.3 percent to 92.7;
- Attendance increased from 92.9 percent to 94.5 percent.

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Technical High School Succeeds with Schoolwide Improvement Effort

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A total school effort to improve student achievement is working at **Polytech High School** in Woodside, Delaware. The school is operating at capacity and turned away students who wanted to enroll in both 1993 and 1994.

Actions the Polytech School District has taken to raise achievement include:

- Setting the strictest graduation requirements of any high school in Delaware. Polytech High School students must complete 25.5 credits to graduate. The credits must include four in English, three in mathematics, three in science, six in an occupational major, and three in occupation-related courses.
- Upgrading academic and vocational studies. The school has eliminated all mathematics courses below the level of pre-algebra (except for individualized courses). Principles of Technology and ChemCom applied science courses were added to the curriculum. To improve communication skills, the school instituted a writing-across-the-curriculum program. A senior project combining academic and vocational studies is required of all 12th-graders. In vocational courses, students complete challenging projects connecting high school with the workplace.
- Organizing the school for students and teachers. Polytech High School offers academies or schools-within-schools in the areas of technology, industry, business and professional careers, and health-related careers. Academy teachers remain with the same students for three years. In addition, the school has adopted block scheduling to provide more time for instruction and for teachers to meet and plan together.
- Strengthening the guidance system. Counselors visit the homes of incoming ninth-graders to discuss the school's objectives, its expectations for students, and ways parents can assist their children. Teachers work as mentors with four to six students who are having difficulties with their studies.
- Assessing improvement. The school is committed to collecting data on key indicators as part of continuous school improvement. It has expanded assessment of basic academic skills and has identified indicators for tracking student progress. Teachers examine the data to identify learning gaps and to recommend actions for improving student achievement.

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Designing and Implementing an Engineering Academy That Follows *HSTW* Guidelines

2 6 7

Tampa Bay Technical High School is a comprehensive county-wide magnet school located in Hillsborough County, Florida. All of the 1,475 students are enrolled in technical programs.

Two "academies" or schools-within-schools are available to students: the Academy of Health Professions and the Academy of Pre-Engineering Technology. The pre-engineering academy opened at the beginning of the 1994-95 school year.

Students in the pre-engineering academy choose from among three programs of study: Tech Prep, college preparatory, or Florida Academic Scholar. The ninth grade program of

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study includes an engineering course, five required courses, and one elective. Tenth grade courses include one engineering course, five required courses, and one elective. Students take two engineering courses and five required courses in the 11th grade, and seniors take two or three engineering courses, four required courses, and/or one elective.

The program enrolled ninth- and 10th-graders in 1994-95 and will include 11th-graders in 1995-96. The first class will graduate in 1996-97.

Parental involvement begins with orientation meetings during which parents of ninth- and 10th-graders review the program of study. Parents also attend open house events, conferences, advisory board meetings, and parent-teacher association meetings.

Academic and technology teachers use integration and infusion in presenting the pre-engineering academy curriculum. In one example, students compare road building in ancient times with that of today. In another, they combine model rocket building and aerodynamics studies with computer simulations. Applied activities aimed at meeting the needs of students and the community are continuously developed by teachers with input from advisory boards and area colleges.

After receiving initial funding from the school board, Tampa Bay Technical High School received a grant from the Florida Department of Education to develop and improve the pre-engineering program. The grant will result in increased staff development in such topics as team building, integration and infusion, technology, and specific engineering career choices.

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Summer Internship Program Helps Teachers Bridge the Gap Between Education and Industry

Five instructors participated in the first Teachers in the Business and Industry World summer internship program held in Meridian, Mississippi. They included an English teacher and a social studies teacher from **Northeast Lauderdale High School**, a geometry teacher and a trigonometry teacher from **Meridian High School**, and a mathematics instructor from **Meridian Community College.**

These teachers saw first-hand the mathematics, science, and communication skills needed in the modern workplace. They also learned new ways to teach these skills by relating them to real-life situations.

The program resulted from a series of meetings involving local business and education leaders. Five companies—Delco Remy America, Pioneer Inc., Structural Steel, Peavey Electronics, and Avery Dennison Corporation—offered to provide the internships for secondary and postsecondary teachers.

Although teachers' on-the-job experiences varied from company to company, each internship emphasized essential workplace skills:

- Responsibility;
- Mathematics, communication, and computer skills;
- Teamwork.

The five teachers were selected through an application process and received stipends of $50 a day from the local tech prep consortium.

Participating teachers were enthusiastic about what they learned. One of them was surprised by the amount of mathematics and com-

munication skills needed by all personnel. Another kept a journal documenting work-related activities for use in reinforcing students' skills. A veteran teacher with 30 years in the classroom said the internship "rejuvenated" her interest in teaching.

Because of positive response, business and industry leaders plan to expand the program next year to allow more teachers to participate.

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Chicago Mathematics Helps Kansas High School Increase Students' Achievement and Problem-Solving Skills

Topeka West High School in Topeka, Kansas, has been using Chicago Mathematics since the 1991-92 school year. Chicago Mathematics, wider in scope than traditional mathematics courses, emphasizes reading, problem solving, and real-world applications. The curriculum was developed through the University of Chicago School Mathematics Project and is based on the recommendations of national groups of mathematics teachers.

The school adopted the Chicago Mathematics geometry course first and then added the Algebra; Advanced Algebra; Functions, Statistics, and Trigonometry; and Pre-Calculus and Discrete Mathematics courses.

Teachers and students at Topeka West High School faced challenges in implementing Chicago Mathematics. Teachers struggled with changing from a traditional teacher-centered instructional style to one calling for students to be independent learners. In mastering new instructional strategies, teachers from Topeka West High School spent many hours attending workshops and participating in inservice activities both in and out of the district.

The biggest change for students is the curriculum's intense focus on how mathematics concepts are applied to real situations. Instead of repeating mathematical skills, students read and apply mathematical knowledge. They also learn to recognize and understand mathematics concepts used in other academic and vocational courses.

Three outcomes indicate that Chicago Mathematics effectively prepares career-bound students at Topeka West High School:

- Students score higher than the district average on criterion referenced tests.
- Tenth-graders exceed the state average in sophomore mathematics assessments.
- Mathematics and other teachers cite improvement in students' problem-solving skills.

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Developing New Lesson Plans and Projects Based on Teachers in Industry Program

Twenty teachers from three high schools in **Douglas County, Georgia,** are using new lesson plans and assigning new projects after participating in a Teachers in Industry program developed by the county school system. The purpose of the program is to change classroom practices by updating teachers on new technology and modern business strategies.

Participating teachers:

- Observed workers at the job site;
- Identified needed technical skills and recent trends in business and industry;
- Gathered information to assist students in career planning;
- Designed and implemented lesson plans and projects to improve students' mathematics, science, communication, problem-solving, and teamwork skills.

Even though Douglas County is not a large manufacturing area, the school system enlisted the support of a variety of companies in acquainting teachers with the workplace. For example:

- At a heating and air conditioning manufacturing company, teachers observed purchasing, assembly, sales, and shipping procedures.
- Teachers learned about various aspects of banking at two financial institutions.
- A medical center arranged for teachers to rotate through the radiology, physical therapy, and diagnostic services departments.
- At one company, teachers observed the production of hydraulic cylinders used in tractors and dump trucks.
- Teachers visiting a screenprinting company observed the art, computer, and graphic design skills needed in creating large advertising posters.
- A car dealership introduced teachers to sales, service, parts, car repair, and accounting departments.
- At an architectural products company, teachers saw the design and production of metal fabrication used in skyscrapers and other office buildings.

The first Teachers in Industry program took place in the summer following the 1994-95 school year. Teachers received a stipend and professional development credit for 20 hours of workplace experience.

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Career Center Instructors Create a Mathematics Workbook for Career-Bound Students

Instructors at **Northern Tier Career Center** in Towanda, Pennsylvania, wrote a mathematics skills workbook to help career-bound students and their academic teachers connect mathematics to the workplace. The book is so effective that parents are requesting copies so that their sons and daughters can get extra practice in solving career-related mathematics problems.

The workbook contains examples of mathematics concepts used in the eight career programs offered at the center. The programs include electrical occupations, food preparation, cosmetology, health assistant services, building construction, auto body and fender repair, automotive technology, and electronics computer repair technology.

Copies of the workbook were sent to every mathematics and learning support teacher at high schools in the nine districts sending students to the career center. When students say they do not see the need for mathematics in their career fields, teachers have samples of how ratio and proportion, measurement, charts and graphs, the Pythagorean theorem, and other mathematics skills are used in on-the-job situations.

The project began in 1992-93 when the center joined the *High Schools That Work* program. The center's integration team identified mathematics as the area in which students needed the most help.

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Employers Establish a Statewide Nonprofit Organization to Help Students Prepare for Metalworking Jobs

Students from seven Arkansas *High Schools That Work* sites participate in a youth apprenticeship program that trains future machinists, tool and die makers, and welders for high-skill, high-wage careers. The program is operated by the **Metalworking Connection, Inc.**, a nonprofit manufacturing corporation composed of over 50 metalworking companies in the state.

Youth apprentices in the program usually work full time during the summer and 16 to 20 hours per week during the 11th and 12th grades. They receive salaries and high school credit for their mentored on-the-job training.

In addition to work-based learning, these students participate in 144 hours of school-based technical training per year. The 10 areas of technical training include mathematics, theory, blueprint reading, measuring, gauging, symbols, schematics, team building, problem solving, and safety.

Youth apprentices remain in the program after high school graduation until they complete on-the-job training and technical classes. On successful completion of the program, they are certified as journeymen by the U.S. Department of Labor. Whether or not they enter a two- or four-year postsecondary educational institution, they must continue in technical classes provided by the Metalworking Connection.

The Metalworking Connection is a 501(c)(3) agency supported by the participating companies. It employs and pays the students, provides workers' compensation, prepares tax forms, and keeps books on the program.

Recruitment of apprentices is coordinated with the participating high schools. Sponsoring companies interview and select the students. They agree to provide work-based learning in accordance with the U.S. Department of Labor's apprenticeship standards.

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Same Page, Same Hymn: Work-Based Learning Team Expands Students' Options

Caddo Career Center in Shreveport, Louisiana, is a vocational-technical shared-time facility serving 10 area high schools. Some 850 students in grades 11 and 12 receive technical preparation and related instruction in two- and three-hour blocks. The curricula for 24 vocational-technical courses are based on local business and industry standards.

Many Caddo Career Center students begin work site learning during high school and continue working after graduation. Others attend two-year technical and community colleges or four-year colleges and universities.

Until recently, no standard work-based learning plan existed to guide teachers in their instruction and to ensure a continuum of work-based learning options for students. In fact, a variety of printed forms for agreements, evaluations, and other work-based learning activities existed. In addition, work-based learning terminology was used inconsistently throughout the center.

To upgrade, standardize, and expand work-based learning options, the center organized a work-based learning team, sent teachers to conferences and workshops, and consulted professional publications and research reports on successful programs. The center also built on its existing strengths and successes.

As a result of this activity, the work-based learning team developed:

- A training agreement for use schoolwide;
- A wage and hour report form used by all students who spend time at a work site;
- A work site log sheet for students to reflect on experiences and observations;
- Criteria for participation in work-based learning;
- Consistent definitions for work-based learning terminology.

The team designed and implemented a structured work-based learning course titled *Maintenance I: Manufacturing Processes* in partnership with Specialty Westland Oil Company. Five students enrolled in the course in 1994-95. The team also designed and implemented a Manufacturing Design Technology career pathway in cooperation with Woodlawn High School. Eighteen freshmen and 20 sophomores are enrolled in this pathway.

The career center plans to offer a continuum of work-based learning options to stimulate students in all courses to meet high standards in technical and workplace readiness skills. An industry-recognized credentialing system will be part of the work-based learning program.

In the 1994-95 school year, 51 percent of 380 career center 12th-graders enrolled in work-based learning. Of these, 33 percent held paid training positions and 18 percent participated in non-paid student internships.

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Semester Block Scheduling Benefits Students and Teachers

Spring Valley High School in Columbia, South Carolina, serves 2,600 students in grades 9 through 12. For several years, administrators and faculty examined alternatives to the traditional six-period school day. The alternatives included several types of block scheduling. School leaders finally decided on a semester block or 4-4 organizational plan similar to ones used successfully in Colorado, North Carolina, and Maryland. They chose to implement a 4-4 plan in the 1994-95 school year.

Leaders at Spring Valley High School have found that block scheduling benefits students and teachers. Under a 4-4 plan, students can:

- Earn 32 credits (instead of 24) in four years.
- Focus on four, rather than six, classes per semester.
- Interact more productively with teachers. Class periods are longer, and teachers are responsible for teaching fewer students.
- Enjoy a more positive school climate with fewer discipline problems.
- Experience in-depth learning. Class periods are 90 minutes long, rather than the traditional 50 to 55 minutes.
- Experience 180 additional hours of instruction per year. Four 90-minute classes per day for 180 days equals 1,080 hours per school year, while six 50-minute classes per day for 180 days yield only 900 hours per year.

Teachers benefit by being able to:

- Teach fewer courses (three instead of five) and fewer students (potentially 70 instead of 130) per semester.
- Spend more time planning instruction and interacting with parents. A daily planning period lasts 90 minutes rather than 50 minutes.

Tax-paying parents and community members benefit from more efficient investment of education dollars. For example:

- Teachers teach more courses (six instead of five) and more students (potentially 140 instead of 130) per year.
- Fewer textbooks are needed for many courses. For example, instead of all freshmen taking English 1 for an entire year, half of them take it the first semester and half the second semester. The number of textbooks needed is cut in half.

At the end of the first nine weeks, 90 percent of parents who completed a survey about semester block scheduling at Spring Valley High School rated the 4-4 plan as "great" or "okay." At this point in the school year, 113 percent more students than in 1993-94 had a grade point average of 4.0 or above.

At the end of the first semester, a random sample of 100 Spring Valley High School students revealed that:

- 89 percent of freshmen and 95 percent of students in grades 10 through 12 preferred semester block scheduling to a traditional schedule.
- 71 percent of freshmen and 81 percent of students in grades 10 through 12 said semester block scheduling enabled them to make better grades.

In ninth-grade English classes for students with average and below-average skills, the percentage of D's and F's dropped from 46 to 38 percent.

Discipline at Spring Valley High School has also improved. At the end of the first semester, teachers had written 40 percent fewer discipline notices than they did in the same time period during the previous year.

Ninety-two percent of the Spring Valley High School faculty say they prefer a 4-4 plan to any other type of schedule.

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Getting All Teachers Involved in *High Schools That Work*

The curriculum at **Lakeland High School** in Suffolk, Virginia, is geared toward preparing all students for postsecondary education and employment.

After attending staff development workshops on interdisciplinary lesson planning, academic and vocational teachers worked in teams to develop lessons of their own. They received blank lesson plan forms, a deadline, and instructions for every lesson to contain a vocational component.

Two examples of their plans include units on Exploring World Trade (combining marketing and social studies) and conducting research before writing requests for information, products, or services (combining agriculture and English).

The lessons were printed in a booklet titled *Integrated Lesson Plans* which is being distributed by the Virginia Department of Education. Each plan lists integrated disciplines, lesson objectives, vocational applications, materials needed, possible activities, and ways to evaluate student performance.

By working together, academic and vocational teachers at Lakeland High School are learning more about what is taught in other classrooms. Their students benefit by having concrete examples of the relationships between high school studies and real life.

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Using Flexible/Block Scheduling to Achieve the *HSTW* Goals and Key Practices

North DeSoto High School, a rural comprehensive school in northwest Louisiana, is experiencing dramatic improvement in student behavior and achievement as a result of flexible block scheduling. Implemented three years ago and modified somewhat each year, the seven-period schedule includes these features:

- All seven classes meet on Monday. Periods one through four meet for an hour and 15 minutes each, while periods five through seven meet for 30 minutes to allow teachers to remind students of assignments for the week.
- On Tuesdays and Thursdays, periods one through four meet for an hour and 45 minutes each.
- On Wednesdays and Fridays, periods five through seven meet for two hours each. A 30-minute activity period after lunch allows students to attend club meetings or pep rallies, to take makeup tests, or to receive extra help.

Many changes in student behavior and achievement have taken place during the past three years. The improvements include:

- A significant decrease in discipline problems. Because students change classes less often, they have less "dead time" in the hallway between classes.
- Increased attendance. If students miss a day of class, they fall behind in their studies.

- Increased completion of homework. Students prepare for only three or four classes per day, and teachers have more time to help students understand homework assignments.
- Lower failure rate. Teachers use improved instructional techniques that relate learning to real life.
- Increase in number of higher-level courses and vocational courses taken. The schedule allows students to earn more credits.

Teachers emphasize the importance of a planned program of high school study and utilize instructional methods that put higher-level courses within the reach of more students.

School leaders point to staff development as the essential ingredient in the schedule's success. Teachers have learned to make students the workers and therefore the learners. Staff development has focused on team teaching, integrated academic and vocational studies, hands-on learning, creativity, and high-quality instruction.

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How a Superintendent Gives Teachers, Administrators, and Counselors the Support Needed for School Improvement

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Franklin High School in Franklin, Virginia, has been a *High Schools That Work* site for two years. The only high school in a town of 8,000, the school is characterized by block scheduling, flex time for teachers, one-to-one educational planning, applied teaching strategies, an articulation agreement with the local community college, and a school-wide computer network.

The school's progress in the *HSTW* program stems from a district-level philosophy of site-based management as well as a willingness and desire to improve learning for all students. The superintendent, central office administrators, and school board members have provided strong support for school leaders and teachers in implementing the *HSTW* key practices.

The superintendent has identified six key ingredients for helping a school succeed in *HSTW*. They include:

- A superintendent and school board who understand the program and support school improvement;
- An underlying philosophy of site-based management;
- Constant encouragement and support for the *HSTW* team;
- A willingness to provide technical and administrative support through policy decisions, expenditures for materials and staff development, and assistance in making curriculum and instructional changes;
- Administrative follow-up to ensure that objectives are being met;
- A willingness to explore new ideas and take risks.

The superintendent of the Franklin school system supported school leaders and teachers as they participated in conferences and work-

shops and made recommendations for raising graduation requirements and purchasing a computer network.

The school's efforts are paying off in increased enrollment in higher-level mathematics and science courses and in improved performance on achievement tests. For example, the school district recently moved into the top 10 percent in the state in the number of students passing Virginia's Literacy Passport test.

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The Pioneer Castle: An Interdisciplinary Unit

Wayne High School, located in Wayne County in southern West Virginia, enrolls 750 students in grades 9 through 12. The school has replaced the general track with a choice between college preparatory and tech prep programs of study. Block scheduling is being implemented in the 1995-96 school year to give students and teachers more time to focus on challenging courses and projects.

In December 1994, English and vocational teachers met with the *High Schools That Work* site coordinator during faculty senate time to develop a project that would blend high-level academic studies with challenging vocational studies. The result was "The Pioneer Castle," a project designed to involve all vocational teachers at Northern Wayne Vocational-Technical School and their students enrolled in English literature classes at Wayne High School.

Students studied castles from a literary perspective in English classes by focusing on the history and literature of the medieval period. They studied castles from a structural point of view in classes at the vocational-technical school.

To complete the project, students in drafting classes drew plans for a scale model castle; students in basic electricity classes planned the wiring; students in heating and air conditioning classes planned the heating and cooling systems; students in ornamental horticulture classes created a landscaping design; and students in building construction classes concentrated on materials and construction. In business classes, students studied the occupations involved in building and maintaining a castle as well as the economic impact of construction and maintenance.

Working in groups, the students built several small castle models. They also wrote reports and gave oral presentations on the project in their English classes. They received grades from their English and vocational teachers.

Vocational teachers said the project:

- Created a spirit of teamwork between the high school and the vocational-technical school;
- Gave students a better understanding of academic and technical subjects;
- Helped students relate academic concepts to their vocational and technical fields;
- Strengthened an appreciation for integrated learning at the two schools and among parents and the community;
- Showed students how to relate their high school education to skills used in the workplace.

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The Electric Duke Races to Victory; Project Blends Academic and Vocational Studies

6 7

Twelve academic and vocational students from **Gloucester High School** in Gloucester, Virginia, worked as a team to build a prize-winning electric-powered car, the Electric Duke (named for the school mascot). Two auto technology instructors guided the interdisciplinary team of students from English, Principles of Technology, auto technology, electronics, metals technology, building trades, and pre-engineering classes.

Virginia Power Company, the local electric utility company, contributed $1,500 to fund the project. Many local individuals and businesses also gave their support.

The car uses a 1983 Mercury Lynx body and a 20.9 horsepower motor and travels at speeds in excess of 85 miles per hour.

At the prestigious Electric Grand Prix competition and road race held at Richmond International Raceway in May, the Electric Duke won first place in the long-distance speed race. It captured eighth place in the overall competition.

The two-day racing event is sponsored annually by Virginia Power and other electric utility companies. The Gloucester High School team competed against 18 other high school and college teams from the mid-Atlantic region.

The victory at Richmond qualified the team to compete against winners from throughout the nation at the National Grand Prix competition scheduled for March 1996 in Phoenix, Arizona.

Funds from community organizations will be used to send the team and their instructors to the national event.

This project has helped Gloucester High School strengthen its connections with the community and demonstrate the value of high-level integrated learning. The project serves as a model for other interdisciplinary activities at the school.

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Swimming Pool Project Illustrates Use of Higher-Level Mathematics in the Workplace

6 7

Students enrolled in Applied Mathematics I and business studies at **Manatee High School** in Bradenton, Florida, worked together on the procedures for building a backyard swimming pool. Based on research and their calculations, students completed either a scale drawing or a model of a swimming pool. Students developed mathematical formulas for determining the area and volume of the pool and conducted research on local building regulations. They also estimated the cost of the shell, the tile, the decking, the electrical wiring, and the plumbing.

In developing a budget for the project, the students considered whether to add a heater, a screened enclosure, or a diving board. Another consideration was the number of gallons of water needed to fill the pool and the cost of keeping it filled.

The swimming pool project is one of many integrated learning projects conducted at Mana-

tee High School. The school has a population of 2,400 students and 135 faculty members. Other projects include:

- Students from a computer assisted drafting class and a geometry honors class built a portable nine-hole miniature golf course.
- Students from marketing classes worked with students from foreign language classes to examine international laws and customs.

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From Trash to a Children's Train: An Integrated Learning Project

6 7

Students at **North Penn High School** in Lansdale, Pennsylvania, produced pre-school equipment for the school's child development course playground. A 40-foot-long train consisting of a locomotive and four cars was constructed of plastic lumber made by a Pennsylvania company from recycled curbside trash.

The train is located in the courtyard of the school and is being used as a child development laboratory. It meets federal safety standards.

Students in child development classes researched and critiqued playground equipment models and evaluated the project. Students in an advanced manufacturing course designed and constructed the train. Mathematics students calculated the number of plastic soft drink bottles used for the lumber and the amount of landfill space saved by using recycled materials. In addition, these students wrote papers for their English classes about the success of the project.

The project united high school students, pre-schoolers, teachers, parents, and the community. The Kiwanis Club of Lansdale contributed $1,500 for materials.

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Award-Winning Guidance Program Involves Parents and the Community

8

Dorchester School District Two in Summerville, South Carolina, has enlisted the cooperation of teachers, counselors, students, parents, business and industry leaders, and community representatives in an ongoing career development program for all students. The program includes career awareness, exploration, and preparation.

Students record their career development and school-to-work activities in a Student Career Planner portfolio. The portfolio is a repository for assessment results, a six-year plan, and other career planning documents. Graduates show the portfolios to admissions counselors and prospective employers.

Each student in grades 9 through 12 is enrolled in one of four career clusters, including business and information, engineering and industry, arts and humanities, and health and human services. The students participate in school-to-work transition activities such as job shadowing, mentoring programs, service learning, internships, cooperative education, and youth apprenticeships related to their career clusters.

All students meet with counselors several times during the school year to update their career folders and make plans for education and work experience in the future. Parents meet with the counselors during the school day and at night.

Career guidance at each grade level includes these activities:

- Ninth-graders participate in a Career Speaker's Day conducted in cooperation with the local chamber of commerce, a civic club, and a business organization. In English classes, students write critiques of the presentations for their portfolios.
- Tenth-graders visit the local technical college to explore three programs of study. Afterwards, they complete an assignment on the visit for their English classes.
- At the beginning of the year, counselors speak to all 11th- and 12th-grade English classes to provide information on career preparation. The topics include jobs of the future, career options, school-to-work transition programs, job-seeking and job-keeping skills, work ethics, and decision-making.

The guidance system includes a strong staff development component to acquaint teachers, counselors, and administrators with workplace standards and relevant curriculum and instruction. In addition to staff development sessions throughout the year, the district offers two graduate courses on educational and career planning. One course includes visits to 12 local industries.

As a result of guidance efforts emphasizing the importance of integrated academic and vocational studies, enrollment in vocational programs has increased in the district. The number of students entering postsecondary education has also increased.

In recognition of its efforts on behalf of career-bound students, the Dorchester program received the first National Planning for Life Award presented by the U.S. Army and the Committee for Economic Development.

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Using Reading to Learn Strategies in the Guidance and Student Services Program

Members of the guidance and student services department at **Winder-Barrow High School** in Winder, Georgia, have incorporated Reading to Learn strategies into all activities with students, teachers, and parents. This approach reinforces a school-wide effort to use Ray Morgan's reading strategies. Morgan, the author of *Reading to Learn in the Content Areas*, conducts workshops and teleconference courses for teachers in the *High Schools That Work* program.

In the past, counselors did a great deal of reading in presenting freshmen orientation programs, making classroom presentations for 12th-graders, and conducting workshops for parents. After participating in Reading to Learn training at the school, the guidance staff developed ways to involve students and parents in

reading and doing their own research for guidance activities.

To reinforce students' reading skills as they participate in guidance activities, Winder-Barrow counselors use these reading techniques:

- Two-column note taking—students use this technique while reading materials on a variety of career options.
- Semantic feature analysis—this technique helps students understand the nuances of language. Students use this technique in the guidance system to compare and interpret programs of study.
- Treasure hunt—instead of searching for information on postsecondary options for each student, counselors provide 10 to 15 questions on admissions requirements, costs, etc. to help students find the information they need.
- Structured overview—students use this method to look at a number of career pathways before writing a six-year plan.

The Winder-Barrow counselors also use reading strategies in their meetings with parents. Examples include:

- Using a process known as cubing to open a discussion of students' career choices. Participants relate their prior knowledge to new situations as they describe, compare, associate, analyze, apply, and argue for or against a particular action.
- Administering pre and post tests to determine what parents need to know about student financial aid.

School leaders attribute a 17-point improvement in students' SAT verbal scores between 1993-94 and 1994-95 in large part to the school-wide reading program. Student support teams of parents and teachers report that students are taking increased responsibility for their own learning. Counselors report having fewer conversations with parents concerning their children's organizational and study skills.

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Career Action Plan Program Involves All Teachers; Most Parents Participate

8

Springdale High School in Springdale, Arkansas, is committed to the development of school-to-work transition plans for all students in the 1,800-student facility. In 1992, the school initiated a Career Action Plan (CAP) program involving every teacher as a CAP advisor. As a result of the program, 92 percent of parents of students in grades 8 through 11 attend annual conferences to help plan their sons' and daughters' programs of study.

Before the CAP program, students selected courses randomly. Many career-bound students' transcripts resembled smorgasbords of course offerings with no connection to plans for future work or study. Graduation, not preparation, was the goal of many students.

In the CAP program, all students:

- Meet monthly with a teacher-advisor to learn about school-to-work opportunities. The ratio is 20 students to one advisor. Students follow a prepared guidance curriculum that includes printed information and locally-produced videotapes.
- Develop a career portfolio and an Individualized Career Plan.
- Meet with their parents and a CAP advisor each spring to update the career portfolio, evaluate progress toward a planned pro-

gram of study, and set short-term and long-term goals.

- Participate in career assessment in grades 8 and 10.

The CAP program paves the way for integrated academic and vocational studies by introducing all teachers to the content of vocational courses. This component is the key to success in helping students plan programs of study.

Enrollment in vocational programs at Springdale High School has reached capacity. The school is adding programs to prepare computer and electronics technicians and is offering youth apprenticeship programs in the areas of computer information systems, banking and finance, and medical professions. In addition, the school is revamping the family and consumer services curriculum and plans to add biotechnology to the agriculture curriculum in the 1996-97 school year.

The Career Action Plan program is yielding positive results. All but 100 of Springdale High School's students are taking mathematics in 1995-96. These courses are high-level since the school does not offer mathematics courses below the level of Algebra I. A number of students are enrolled in English and biology courses for which they will receive college credit.

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Students Develop Education and Workplace Skills in Mandatory Semester-Length Course

8 10

Ninth-graders at **Woodville High School** in Woodville, Texas, get off to a good start in a mandatory semester-length course that helps them develop education and workplace skills. The course helps them answer the questions, "Who am I?," "Where am I going?," and "How do I get there?"

Four teachers conduct the EAGLE (Encouraging Applications in a Global Learning Environment) course in the EAGLE Center that includes a classroom, computer lab, and resource center.

Students in the course learn personal, academic, and career strategies as well as how to apply them to actual situations. They receive grades for learning the strategies and for using them in other courses. For example, when students complete an EAGLE lesson on note-taking, they also turn in a set of notes taken in another class. EAGLE teachers advise other ninth-grade teachers about what the students are learning.

In developing the course, the guidance department consulted workforce data and student achievement data. School records showed that ninth-graders accounted for 50 percent of student disciplinary problems. In the first year of the EAGLE program, the percentage dropped to 30 percent. Woodville High School leaders attribute this improvement to the fact that the program teaches students to set worthwhile goals, develop action plans for success, and prepare for lifelong learning.

The program uses a variety of commercial software and other resources. Teachers and counselors in the program are guided by a committee of secondary and postsecondary educators, parents, and business representatives.

Since the EAGLE course began three years ago, the school has achieved these improvements:

- More students take the PSAT examination, and their scores are higher than those of previous students.

- Every student develops a high school program of study that is reviewed annually and modified as needed. Students discuss these plans with their parents.
- Ninth-grade teachers report that students' organizational skills have improved substantially.

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A Comprehensive Guidance System Helps Prepare Today's Students for Tomorrow's Jobs

Walhalla High School enrolls 900 students in grades 9 through 12 in a rural, manufacturing-rich area of South Carolina. The school has been a member of the *High Schools That Work* program since 1987. Students enroll in either a college preparatory or a tech prep program of study.

Career awareness and exploration are vital elements of the school's guidance system. A full-time specialist manages a career enrichment program involving students, parents, teachers, counselors, and community representatives.

One aspect of the Walhalla High School guidance system is the use of computerized guidance programs beginning in middle school. These programs help assess students' areas of interest and acquaint students and parents with the five occupational clusters available at the high school.

In the Walhalla High School guidance system, students:

- Meet with their parents and a middle school career specialist to develop a five-year plan.
- Complete a computerized self-assessment module in re-evaluating the plan annually.
- Use a series of computerized modules in planning course work, job or volunteer experiences, and postsecondary options. Students review computer printouts with parents, teachers, and counselors.

Between 1988 and 1995, Walhalla High School experienced these positive changes:

- The dropout rate declined from 3.7 percent to 2.2 percent.
- The attendance rate improved from 96.5 percent to 97.2 percent.
- Enrollment in remedial courses declined 90 percent.
- The percent of students planning to pursue postsecondary studies increased from 65 percent in 1991 to 100 percent in 1995.
- The number enrolled in occupational courses at the area career center increased from 78 students in 1990-91 to 186 students in 1995-96, an increase of 138 percent.
- Over 63 percent of 12th-graders in 1995 took three or more mathematics courses.
- Over 82 percent of 12th-graders in 1995 took three or more science courses.

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Involving Parents and Middle School Teachers in Preparing Students for High School Success

Teachers and counselors at **Reitz High School** in Evansville, Indiana, reach out to students as early as the sixth grade to begin preparing them for high school studies. Parents and teachers of these students are a vital part of the extra help process.

Mathematics teachers from the high school meet with teachers from feeder middle schools to share information on the types of courses students are required to take in high school and the applied instructional methods used in teaching higher-level mathematics concepts. Reitz High School teachers want their middle school colleagues to know that Reitz requires students to complete six mathematics credits for graduation and offers no mathematics courses below pre-algebra. Reitz also emphasizes real-life applications throughout the mathematics curriculum.

Incoming high school freshmen and their parents attend an orientation meeting in April to learn what will be expected of them and how to plan for success. Parents and students attend breakout sessions on topics such as curriculum, instruction, grading systems, and modern business standards. As many as 600 parents of 400 students attended an orientation meeting.

A transition team of teachers guides those ninth-graders who are in danger of dropping out of school. Team members check on the students' progress during the day and contact parents at night to create family support for higher achievement. As a result, 80 percent of these students graduate from high school, and some enroll in postsecondary education.

Teachers at Reitz High School volunteer their time for a number of extra help activities. Mathematics teachers are available in tutoring sessions held before school each day and after school twice a week.

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Students Get Extra Help During In-School Flex Time

Flex time at **Staunton River High School** in Moneta, Virginia, gives students extra time to do homework, take make-up tests, meet with teachers and advisors, and work on special projects. Flex time—45 minutes every Tuesday and Thursday—was gained by adding one period on each of these days.

The new schedule was designed to provide time for:

- Individual tutoring for students having difficulty with their studies;
- Make-up work for students who have been absent from school;
- Meetings with advisors to assess and track academic progress.

However, students also use the extra time to work on special integrated projects, pursue assignments in greater depth than is possible during a regular school day, and develop personal academic and technical interests. In typical flex time, students prepare papers and presentations in the computer lab, work on individual or group competition projects in the science lab, discuss difficult concepts with their teachers, work on projects in vocational labs, and do research in the library.

Students, teachers, and parents like the extra time. Students have time to make up work or get ahead, and teachers can offer more individual attention than regular classes permit. Parents report that students have time to manage their studies and to participate in new activities.

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North Carolina High School Uses Data to Maintain and Improve Student Achievement; Changes at the School Include a Computer Network

Smoky Mountain High School in Sylva, North Carolina, has established an electronic partnership with area high schools and Southwestern Community College in efforts to significantly reduce the number of students needing to take remedial courses at the postsecondary level. Through this network, the school has access to the community college placement test and can share software aimed at improving students' academic weaknesses. The school administers an equivalent placement test at the beginning of each semester and the actual test at the end of the semester.

The computer laboratory for this project is located in the Applied Communication classroom. The system is believed to be the only one of its type in a secondary school setting in North Carolina.

This project is one of many initiated at Smoky Mountain High School after school leaders and teachers began to examine assessment data. In 1992, 54 percent of the school's graduates attending Southwestern Community College had to take non-credit developmental reading courses, while 44 percent of them had to take non-credit developmental communication courses.

In 1994 the school administered the *High Schools That Work* Student Assessment in reading, mathematics, and science to 58 students completing a vocational program of study. Even though the students scored higher than the *HSTW* goals in reading, mathematics, and science, school leaders began devising ways to maintain and improve the scores. The strategies they developed are based on *HSTW*'s 10 key practices for raising student achievement.

By examining data from the *HSTW* Student Assessment, school leaders found that only 54.4 percent of students reported daily or weekly use of technical manuals to complete assignments in vocational classes. Leaders took action by scheduling Reading to Learn workshops for academic and vocational teachers in 1994, 1995, and 1996.

The Student Assessment also showed that 67.9 percent of Smoky Mountain High School students completing a vocational major had never received a joint writing assignment from an academic and a vocational teacher. In addition, 34.5 percent of Smoky Mountain High School teachers participating in the *HSTW* Teacher Survey said they had never given essay questions on examinations. To improve these percentages, school leaders are launching a writing-across-the-curriculum project among academic and vocational teachers. A workshop on writing across the curriculum is planned for early 1996.

The analysis of assessment data also showed that 31 percent of students at Smoky Mountain High School said their vocational teachers seldom stressed mathematics, while 44.8 percent of students said their mathematics teachers did not regularly relate mathematical concepts to real life. In efforts to improve these percent-

ages, a mathematics teacher and a computer applications teacher at the school were given joint planning time to develop projects for their students.

HSTW data also showed that 28.3 percent of students never completed a science assignment on a topic related to a community or work setting, and only 34.8 percent of students did so once or twice a year. Using this information, a chemistry teacher and a foods and nutrition teacher developed a joint project on nutrition and health. In another example, students in science and agriscience classes completed a project on water quality.

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HSTW Program

The *High Schools That Work* program is the nation's largest and fastest growing effort to raise the achievement of career-bound students. Created by the Southern Regional Education Board-State Vocational Education Consortium, the program includes over 450 school and school system sites in 21 states.

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